US006385604B1

(12) **United States Patent**
Bakalash et al.

(10) **Patent No.: US 6,385,604 B1**
(45) **Date of Patent: May 7, 2002**

(54) **RELATIONAL DATABASE MANAGEMENT SYSTEM HAVING INTEGRATED NON-RELATIONAL MULTI-DIMENSIONAL DATA STORE OF AGGREGATED DATA ELEMENTS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/634,748**

(22) Filed: **Aug. 9, 2000**

Related U.S. Application Data

(63) Continuation-in-part of application No. 09/514,611, filed on Feb. 28, 2000, which is a continuation-in-part of application No. 09/368,241, filed on Aug. 4, 1999.

(51) **Int. Cl.**[7] **G06F 17/30**
(52) **U.S. Cl.** **707/3**; 707/10; 709/217
(58) **Field of Search** 707/1–5, 100–104; 709/201, 217–219

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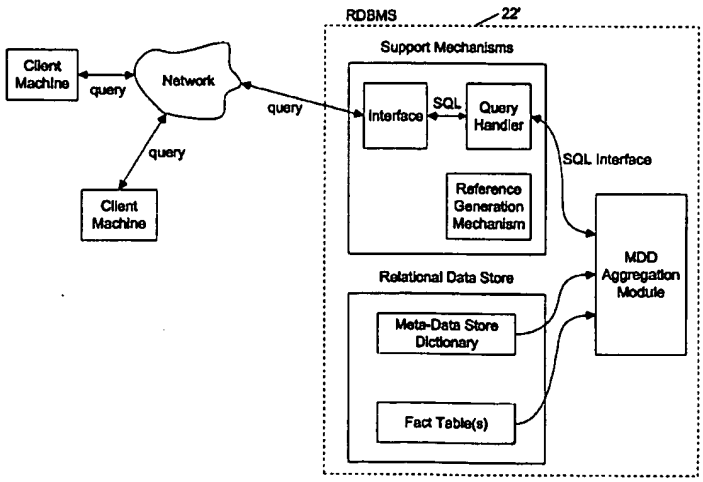
(57) **ABSTRACT**

Improved method of and apparatus for joining and aggregating data elements integrated within a relational database management system (RDBMS) using a non-relational multi-dimensional data structure (MDD). The improved RDBMS system of the present invention can be used to realize achieving a significant increase in system performance (e.g. [deceased] decreased access/search time), user flexibility and ease of use. The improved RDBMS system of the present invention can be used to realize an improved Data Warehouse for supporting on-line analytical processing (OLAP) operations or to realize an improved informational database system or the like.

27 Claims, 25 Drawing Sheets



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